

EA

Notice of Allowability

Application No.

10/687,295

Examiner

Jennifer M. Dolan

Applicant(s)

LOGAN ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amdt 3/14/05.
2. ☒ The allowed claim(s) is/are 18-23,25-30,48-53 and 55-62.
3. ☒ The drawings filed on 16 October 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Anthony Palagonia on 5/12/05.

The application has been amended as follows:

In line 7 of claim 48, "P-type" has been replaced by --N-type--

2. Claims 18-23, 25-30, 48-53, and 55-62 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The primary reason for allowance is the limitation of a P or N-type leakage stop implant disposed under an STI and aligned between the center axis of an STI and a sidewall of the STI, wherein an N or P-well extends under the STI and forms an isolation junction with the leakage stop implant.

The closest prior art related to leakage-stop implants generally falls into one of two categories: The first category includes a leakage-stop implant centered under the trench and extending across the width of the trench (see U.S. Patent No. 6,248,645 to Matsuoka et al.) For this type of structure, the claimed limitation of aligning the leakage stop implant between a sidewall and an axis equally spaced between the sidewalls is clearly not met. In the second

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category, two opposite polarity leakage stop implants are used, with each one extending between a sidewall and the center axis of the STI (see US 6,228,726 to Liaw, for example). In this case, the isolation junction is formed between the two-highly doped leakage stop implants, rather than between the N or P well and the leakage stop implant, as claimed. There are no teachings of a leakage stop implant that satisfies both claimed conditions of extending between a sidewall and the center axis of the STI and forming the isolation junction with an N or P well.

Since the nature of the isolation junction and its ability to prevent inter-well leakage depend upon the position of the leakage-stop implant as well as the relative doping levels of the implant and the adjacent oppositely-doped material with which it forms the isolation junction, a person skilled in the art cannot arbitrarily move a prior art leakage stop implant or eliminate any of the isolation junction-forming materials without critically changing the resistance of the device to inter-well leakage. Furthermore, as there are no teachings in the prior art indicating desirability or even the viability of using the claimed leakage-stop implant structure, and since the claimed structure provides improvements to inter-well leakage by preventing the creation of new leakage paths and minimizing the capacitance generated at the isolation junction, it is the examiner's opinion that it would not have been reasonable or obvious for a person having ordinary skill in the art to combine or modify any of the prior art teachings to form the claimed structure.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (571) 272-1690. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer M. Dolan
Examiner
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